

-CLAIMS-

Please insert the paragraph heading on page 1 of the English translation of the Amended Claims, before claim 1, the following:

- What is claimed is: -.

Please amend claims 1-17 and 19-25 as follows:

- A+ JCB
1. (Amended) Protein with beta-sheet structure, wherein amino acids exposed on the surface in at least two β -strands exposed on the surface of at least one beta sheet exposed on the surface are specifically substituted, deleted or inserted, such that the protein has new specific antigen binding properties or a new catalytic activity or new fluorescence properties.
 2. (Amended) Protein according to Claim 1, wherein it is included in the group consisting of crystallines, spherulines, heat shock proteins, cold shock proteins, β -helix proteins, lipocalins, serpins, fibronectins or transcription factors or is GFP, NGF, tendamistat or lysozyme.
 3. (Amended) Protein according to Claim 1, wherein, amino acids exposed on the surface in three beta strands exposed on the surface are substituted, deleted or inserted.
 4. (Amended) Protein according to Claim 1, wherein, amino acids exposed on the surface in four or more beta strands exposed on the surface are substituted, deleted or inserted.
 5. (Amended) Protein according to claim 1, wherein amino acids exposed on the surface in at least two beta strands in at least two beta sheets are substituted, deleted or inserted.
 6. (Amended) Protein according to claim 1, wherein, amino acids exposed on the surface in three beta strands in two antiparallel beta sheets are substituted, deleted or inserted.
 7. (Amended) Protein according to claim 1, wherein it is a crystalline of vertebrates, preferably rodents, birds or fish.
 8. (Amended) Protein according to claim 1, wherein, it is an alpha-, beta- or gamma-crystalline.
 9. (Amended) Protein according to claim 1, wherein, it is a gamma-II-crystalline protein.
 10. (Amended) Protein according to claim 1, wherein amino acids exposed on the surface of the protein are substituted, deleted or inserted in a region of the beta sheet accessible to a solvent or to a binding partner.
 11. (Amended) Protein according to claim 1, wherein, amino acids exposed on the surface are substituted, deleted or inserted in a β -sheet structure of a domain or a subunit of the protein.
 12. (Amended) Protein according to claim 1, wherein, it is a gamma-II-crystalline which has been obtained by substitution, deletion or insertion of one or

more of the amino acids Lys 2, Thr 4, Tyr s 15, Glu 17, Ser 19, Arg 36 and Asp 38 in gamma-II-crystalline.

13. (Amended) Protein according to claim 1, wherein, amino acids exposed on the surface of the protein have been substituted, deleted or inserted in the beta sheet such that it has antibody-like binding properties or an enzymic (catalytic) activity.

14. (Amended) Protein according to Claim 12, wherein it has binding specificity for estradiol or the conjugate thereof, BSA- β -estradiol-17-hemisuccinate.

15. (Amended) Protein according to claim 1, wherein, it has binding specificity for estradiol or the conjugate thereof, BSA- β -estradiol-17-hemisuccinate and has the amino acid sequence SEQ ID NO. 19 or SEQ ID NO. 21.

16. (Amended) Protein according to claim 1, wherein, it is combined with other proteins or non-protein substances.

17. (Amended) DNA coding for a protein according to claim 1.

18. (Amended) Prokaryotic or eukaryotic vectors or cells comprising a DNA or RNA according to Claim 17 or parts thereof coding for functional regions of the protein.

20. (Amended) Method for preparing a protein according to claim 1, comprising the following steps:

- a. Mutagenesis of the DNA coding for a protein with beta-sheet structure in those regions which code for at least two beta strands, exposed on the surface, of a beta sheet exposed on the surface;
- b. Expression of the mutants obtained in step (a) in a suitable expression system; and
- c. Selection and isolation of mutants having the desired binding properties and/or the desired catalytic activity; optionally
- d. Expression and purification of the beta sheet-mutated proteins.

21. (Amended) Method according to Claim 20, wherein the mutagenesis comprises a substitution, deletion or insertion of specific amino acid positions (site-specific mutagenesis) or non-specific amino acid positions (random mutagenesis) in the beta sheet.

22. (Amended) Method according to claim 20, wherein, the mutants in step b) are expressed in prokaryotic or eukaryotic cells, in a cell-free system as a complex with ribosomes or on the surface of plant or animal cells, yeast cells or phages, viruses or bacteria.

23. (Amended) Method according to claim 20, wherein mutants having the desired binding properties are selected by contacting these mutants with the binding partner and isolating those mutants having the desired binding affinity.

24. (Amended) Method according to claim 20, wherein mutants having the desired catalytic properties are selected by contacting these mutants with their substrate and isolating those mutants having the desired catalytic activity.